

WHAT IS CLAIMED IS:

1. A method for calibrating a motion picture film scanner, said method comprising the steps of:

providing a calibration element composed of a multi-step neutral gray series comprised of a plurality of known density patches that substantially represent the full density vs. exposure range of a photographic element, wherein each density patch corresponds to a prescribed aim voltage;

scanning the calibration element with the motion picture film scanner and generating a signal voltage for each density patch; and

adjusting the motion picture film scanner to bring the signal voltages toward the prescribed aim voltages, thereby generating one or more adjustments that compensate for errors from the prescribed aim voltages and capture substantially the full range of the motion picture film.

2. The method as claimed in claim 1 wherein each density patch represents a unique RGB density corresponding to separate prescribed aim RGB voltages for each density patch, and wherein the steps of scanning the calibration element generates a set of RGB signal voltages for each density patch and adjusting the motion picture scanner brings the RGB signal voltages toward the prescribed RGB aim voltages, thereby generating adjustments that compensate for errors from the prescribed RGB aim voltages.

3. The method as claimed in claim 1 wherein there are a plurality of interacting adjustments to bring the signal voltages toward the prescribed voltages, and the step of adjusting the motion picture film scanner is a process of iteratively adjusting the plurality of adjustments to bring the signal voltages toward the prescribed voltages.

4. The method as claimed in claim 3 wherein the process of iteratively adjusting the plurality of adjustments to bring the signal voltages toward the prescribed voltages is an automatic process.

5. A method for calibrating a motion picture film scanner for a particular film type, said method comprising the steps of:

providing a calibration element composed of a multi-step neutral gray series comprised of a plurality of known density patches that substantially represent the full density vs. exposure range of a photographic element, wherein each density patch corresponds to a prescribed aim voltage;

scanning the calibration element with the motion picture film scanner and generating a signal voltage for each density patch;

adjusting the motion picture film scanner to bring the signal voltages toward the prescribed aim voltages, thereby generating one or more adjustments that compensate for errors from the prescribed aim voltages;

scanning the motion picture film and generating an output signal that captures substantially the full range of the motion picture film; and

applying a custom correction to the output signal of the motion picture film scanner for the particular film type being scanned.

6. The method as claimed in claim 5 wherein each density patch represents a unique RGB density corresponding to separate prescribed aim RGB voltages for each patch, and wherein the steps of scanning the calibration element generates a set of RGB signal voltages for each density patch and adjusting the motion picture scanner brings the RGB signal voltages toward the prescribed RGB aim voltages, thereby generating adjustments that compensate for errors from the prescribed RGB aim voltages.

7. The method as claimed in claim 5 wherein the custom correction is a neutral scale correction provided by a one-dimensional look up table.

8. The method as claimed in claim 5 further comprising the step of applying a color correction provided by a matrix to the output signal of the motion picture film scanner.

9. The method as claimed in claim 5 further comprising the steps of:

storing a plurality of custom corrections for a plurality of different motion picture film types;
determining the film type of the motion picture film being scanned;
selecting a particular custom correction corresponding to the determined film type; and
applying the particular custom correction to the motion picture film scanner for the particular film type being scanned.

10. The method as claimed in claim 5 wherein there are a plurality of interacting adjustments to bring the signal voltages toward the prescribed voltages, and the step of adjusting the motion picture film scanner is a process of iteratively adjusting the plurality of adjustments to bring the signal voltages toward the prescribed voltages.

11. The method as claimed in claim 10 wherein the process of iteratively adjusting the plurality of adjustments to bring the signal voltages toward the prescribed voltages is an automatic process.

12. A color grading system for color grading a video signal generated from a motion picture film, wherein the film includes a code indicative of the film type, the improvement wherein the color grading system comprises:

a decoding system for decoding the film type from the code on the motion picture film; and

a processor for applying a film-type dependent neutral scale correction to the video signal in response to the decoded film type.

13. The color grading system as claimed in claim 12 further comprising a storage device for storing a plurality of neutral scale corrections for different film types, and wherein the processor selects the appropriate correction from the storage device in response to the decoded film type.

14. A method of transferring an image recorded on a motion picture film to a digital output signal using a telecine transfer device capable of generating the digital output signal by scanning a variety of film types each identified by a distinctive code on the film, wherein the digital output signal is corrected according to the film type, said method comprising the steps of:

providing a calibration element composed of a multi-step neutral gray series comprised of a plurality of known density patches that substantially represent the full density vs. exposure range of a photographic element, wherein each density patch corresponds to a prescribed aim voltage;

scanning the calibration element with the motion picture film scanner and generating a signal voltage for each density patch; and

adjusting the motion picture film scanner to bring the signal voltages toward the prescribed aim voltages, thereby generating one or more adjustments that compensate for errors from the prescribed aim voltages;

scanning the motion picture film and applying the adjustments to capture substantially the full range of the motion picture film;

reading the distinctive code on the film, thereby obtaining a film type identification;

applying a custom correction to the digital output signal of the motion picture film scanner for the particular film type being scanned, thereby producing a corrected digital output signal; and

displaying the corrected digital output signal, whereby the transfer is thereby calibrated to capture the inherent dynamic range of the motion picture film and to correct the displayed image according to the identified film type.

15. The method as claimed in claim 14 wherein the custom correction is a neutral scale correction provided by a one-dimensional look up table.

16. The method as claimed in claim 14 further comprising the step of applying a color correction provided by a matrix to the output signal of the motion picture film scanner.

17. The method as claimed in claim 14 further comprising the steps of:

storing a plurality of custom corrections for a plurality of different motion picture film types;

selecting a particular custom correction corresponding to the identified film type; and

applying the particular custom correction to the motion picture film scanner for the particular film type being scanned.

18. A system of transferring an image recorded on a motion picture film to a digital output signal using a telecine transfer device capable of generating the digital output signal by scanning a variety of film types each identified by a distinctive code on the film, wherein the digital output signal is corrected according to the film type, said system comprising:

a film scanner for scanning (a) a calibration element and generating a signal voltage for each density patch on the calibration element, said calibration element composed of a multi-step neutral gray series comprised of a plurality of known density patches that substantially represent the full density vs. exposure range of a photographic element, wherein each density patch corresponds to a prescribed aim voltage, and (b) a motion picture film and generating a digital signal therefrom;

primary controls for adjusting the motion picture film scanner to bring the signal voltages toward the prescribed aim voltages, thereby generating one or more adjustments that compensate for errors from the prescribed aim voltages;

a processor for applying the adjustments to the film scanner so that the digital signal produced therefrom captures substantially the full range of the motion picture film;

a code reader and decoder for reading the distinctive code on the film and obtaining a film type identification; and

a film stock dependent processor for applying a custom correction to the digital output signal of the motion picture film scanner for the particular film type being scanned, thereby producing a corrected digital output signal.

19. The system as claimed in claim 18 further including a display for displaying the corrected digital output signal, whereby the transfer is thereby calibrated to capture the inherent dynamic range of the motion picture film and to correct the displayed image according to the identified film type.

20. The system as claimed in claim 18 further including a recorder for recording the corrected digital output signal, whereby the transfer is thereby calibrated to capture the inherent dynamic range of the motion picture film and to correct the recorded image according to the identified film type.

21. The system as claimed in claim 18 wherein the custom correction applied by the film stock dependent processor is a neutral scale correction provided by a one-dimensional look up table.

22. The system as claimed in claim 18 further comprising a color matrix processor for applying a color correction provided by a matrix to the output signal of the motion picture film scanner.

23. The system as claimed in claim 18 further comprising a storage device for storing a plurality of custom corrections for a plurality of different motion picture film types, and wherein the film stock dependent processor selects a particular custom correction corresponding to the identified film type and applies the particular custom correction to the digital output signal produced by motion picture film scanner for the particular film type being scanned.